

# OV-1 Mohawk

in action



 Aircraft Number 92  
squadron/signal publications

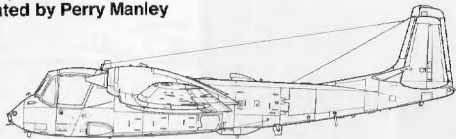
# OV-1 Mohawk

**in action**

**By Terry Love**

**Color by Don Greer**

**Illustrated by Perry Manley**



**Aircraft Number 92**



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CAPT Mike Langer of the Army Aviation Test Board engages a Viet Cong target during a fire support mission over Vietnam, in December of 1961. The OV-10 (60-3726) Mohawk was assigned to the 220th Aviation Company, Phantom Hawks. Mike Langer later bought this same Mohawk — one of the few civilian owned Mohawks.



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ISBN 0-60747-141-2

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## Dedication

This book is respectfully dedicated to my patient wife, Carol, and all Mohawk drivers everywhere.

## Photo Credits and Acknowledgements

The author wishes to thank all of the people who assisted with this project and supplied all of the data, information, photographs, and other materials. A special thanks goes to Lois Lovinski of the Grumman Corporation for her efforts and to Mike Langer for all of his support and help. Finally, the following people have provided me with photographs and other materials needed to complete this project:

Army Aviation Museum  
Department of the Army  
Cliff Frenwick  
Bob Kress  
Mike Langer  
Wayne Matus  
Paul McDermott  
Douglas Slovick  
Scott Rubler

Bob Chenoweth  
Tom Davis  
Pete Hadden of The Cobra Company  
Israel Deffen Ministry  
Dave Minard  
Tim McGowan  
Vernon Suen  
U.S. Army Military History Institute

The first production OV-10A Mohawk (60-2402) over Long Island during 1961. During its testing, some 17000 test miles favorably compared the Mohawk's handling characteristics to that of the Cessna 441 (jet fighter) and commented that the Mohawk had a better rate of roll. (Grumman)



# INTRODUCTION

During late 1954, the U.S. Army issued a requirement for the development of a joint service high performance aircraft for observation, artillery spotting, reconnaissance, command and utility use. On 15 February 1956, a meeting was held between the Army Chief of Research and Development and the representatives of six aircraft companies, including Grumman. At this meeting each company presented its proposals for the new observation aircraft.

After receiving these proposals the Army prepared the final specifications, which were submitted to the Department of Defense (DOD) on 12 March 1956. During this same time frame the DOD was studying Army and Air Force fixed wing aircraft requirements with a view toward avoiding duplication of missions between the two services. This study led to a decision by Secretary of Defense Wilson to place a 5,000-pound weight restriction on Army aircraft, limiting the size of aircraft the Army could operate. Immediately following this decision, the Army requested two exceptions. The first was for the procurement of the de Havilland DHC-4 Caribou and the second was for continued participation in the development of the high performance observation aircraft. DOD approved both exceptions.

During June of 1956, the Army issued Type Specification TS145, which called for the development and procurement of a two-seat, twin turboprop aircraft designed to operate from small, unimproved fields under all weather conditions. Its missions would include observation, artillery spotting, air control, emergency resupply, naval target spotting, liaison and radiological monitoring. The Navy also specified that the aircraft must be capable of operating from escort carrier runways.

In March of 1957, the DOD announced that the Grumman Aircraft Corporation had been designated the prime contractor to build the new observation aircraft, which had received the company designation G-134. While the Army remained the controlling agency, the Navy, acting on behalf of the Marines, was heavily involved and would play an important role in the aircraft's development.

Since its conception, the Grumman G-134 was the center of controversy. The Army and Marine requirements were never actually compatible and compromises were made that suited neither service. From the Army's viewpoint, the design was compromised by the shipboard requirement and other Marine specifications which had little application for an Army observation aircraft. The Marines needed a fixed-wing replacement for the Cessna G-14, and they did not require sophisticated sensors which were planned for other aircraft.

The G-134 had armament pylons because of a Marine requirement that the aircraft be capable of performing light attack missions. The Air Force strongly opposed this feature — tactical air support was the role of the Air Force, not the Army. Now all four services were involved with the development of the G-134. The battle over the air support issue became so heated that at one point, the Air Force demanded that Grumman stop printing company brochures that highlighted the attack potential of the G-134.

In September of 1957, the Marines announced that they were dropping the G-134 program. Due to budgetary problems, the Navy had decided to fund a fleet tanker instead of the G-134. The Army decided to continue the project alone and was actually pleased to be free of the Marine requirements. The first contract called for nine service test aircraft to be built under the designation YAO-1AF. Even though the Marines had dropped the program, the designation OI-1 was reserved for a Marine version.

The first service test YAO-1AF emerged as a small, mid-wing aircraft with its two 960-shp Lycoming T-53-L-3 turboprop engines mounted in scrambled nacelles atop of the wing driving three blade Hamilton Standard propellers. The aircraft had a distinctive



This wooden mockup of the Mohawk, built during the Summer of 1957, has the original T-tail configuration, snow shovels, 120 gallon drop tank, and proposed armament pylons. (Grumman)

five "bug-eyed" look caused by the large bulged canopy fitted over the two place cockpit which housed the crew in side-by-side Martin Baker E-5B ejection seats. The Army had specified a two place aircraft because it felt that a single pilot could not concentrate on low level flying and, at the same time, study the terrain below. The twin-engine configuration was chosen to reduce the aircraft's vulnerability to ground fire.

The original G-134 featured a high "T" tail, however, wind tunnel tests revealed that the aircraft would be impossible to trim dimensionally with one engine out, without resorting to a powered-control system. Such a system would add considerable weight to the aircraft and would increase maintenance requirements. A powered control system would also cause interference with other mechanical systems and cause trim problems when the flaps were lowered. After a great deal of engineering effort and wind tunnel tests, the YAO-1AF was fitted with a unique triple vertical stabilizer. The triple stabilizer layout also proved to be an unexpected example of early "stealth" technology, by creating a smaller overall radar cross section than the original T-tail.

The first YAO-1AF Mohawk (77-0400) on a test flight over Long Island, New York during the Summer of 1959, had the fuselage covered with yarn bolls to absorb the air flow over the fuselage. The ejection seats and fuselage floor cockpit window were deleted on production Mohawks. (Grumman)





The first YAO-1A carried a high visibility Red and White test color scheme in the Summer of 1958. The long probe fitted to the nose was a test instrument probe and was painted with Red and White stripes. (Grumman)

The YAO-1A<sup>1</sup> made its first flight on 14 April 1959 at Bethpage, Long Island, New York. From the beginning the test progressed smoothly, with only minor problems being encountered. On the first flight, it was discovered that the elevators were too heavy, a problem which was easily corrected. The flight test program revealed that the YAO-1A<sup>1</sup> had outstanding flight characteristics. It was fully aerobatic and the controls were found to be very responsive, especially in roll. The YAO-1A<sup>1</sup> proved to have one of the fastest roll rates of any aircraft — about 180 degrees per second. Test pilots reported that the YAO-1A<sup>1</sup>'s flight characteristics were midway between those of a light aircraft and a jet fighter.

One of the requirements was that the YAO-1A<sup>1</sup> be capable of operating from rough forward airfields. The test program revealed that the service test aircraft had exceptional Short Take Off and Landing (STOL) qualities and good low-speed control because of the full-span wing leading edge slats, triple fins and rudders and large flaps. The view from the cockpit was reported to be extremely good, even through the bullet resistant frost windshield, with an unrestricted view 28° down over the nose.

Another requirement established was that the YAO-1A<sup>1</sup> have a service life of ten years, at an average of 800 flight hours per year, or 8000 flight hours. Results of fatigue tests indicated that the YAO-1A<sup>1</sup> would be safe after twice this amount, or a total of 16,000 hours.

The 297 gallon fuselage tank gave the aircraft an endurance of two hours and twenty minutes; however, the aircraft also had the provision for two 150 gallon under-wing tanks, which extended the endurance to four and a half hours. For long range missions, two 300 gallon ferry tanks may be carried in place of the normal 150 gallon tanks. The structural integrity of the internal fuel tanks was subjected to special testing. The fuel tanks were designed to be a structural part of the aircraft and to test the tanks vulnerability to ground fire, a section of the tank material was built, rested against a wall, and fired at with a machine gun — it passed the test.

The original specifications called for a gross weight of 10,425 pounds; however, the YAO-1A<sup>1</sup> weighed 11,125 pounds. This had been anticipated because of the additional strength needed for rough field operations and was accepted by the Army.

During high speed tests, where the YAO-1A<sup>1</sup> reached a speed of 460 mph, the aircraft lost its center fin and rudder. The failure was found to have been caused by excessive vibration and was easily fixed. A third hinge was installed on the rudder and a half pound of weight was added to the rudder trim tab. This ended the vibration problem, and the other eight service test aircraft were all modified with the new center fin and rudder.

Most of the flight testing was done at the Naval Flight Test Center at NAS Patuxent River, Maryland, however, other YAO-1A<sup>1</sup>s were assigned to various Army installations including the Army Aviation Board at Fort Rucker, Alabama. The Army Signal Corps tested the various electronic components to be installed on the aircraft and the Transportation Corps developed the spare parts and maintenance program. During its tests, the Army Aviation Board found that the nose wheel steering was inadequate for rough fields and dirt runways. The Board recommended that production aircraft be fitted with a power boosted nose wheel steering system.

Originally, the YAO-1A<sup>1</sup> was to be named Montauk, after a Long Island tribe of Indians that lived near Grumman Aircraft. This was a fitting name, since the Army named its aircraft after Indian tribes. The Montauk tribe, however, was basically unknown, and the Army decided to name the aircraft after a more well-known and aggressive New York Indian tribe — the Mohawk.

With the service aircraft redesignations of 1962, the YAO-1A<sup>1</sup> was redesignated the YOY-1A. After completing all tests, the Army accepted the Mohawk and ordered the aircraft into production under the designation OY-1A.

This pre-production YAO-1A<sup>1</sup> Mohawk (57-5887) carried Army markings and special Red and White test color scheme, however, it was assigned to the U.S. Navy Test Pilots School at Patuxent River, Maryland during April of 1960. (Author)



When the Mohawk entered service, it was the first turboprop-powered aircraft to enter the Army inventory. Army pilots, used to slow, piston-engined aircraft found the Mohawk to be a "hot ship." Its power and responsiveness tempted some pilots to shove off, resulting in more than a few accidents. The speed and responsiveness of the Mohawk also led the Army to attempt several new records for turboprop aircraft. On 16 June 1966, test pilot Jim Peizer flew an OV-1A to 3,000 meters (9,842 feet) in three minutes, forty-one seconds, and to 6,000 meters (19,685 feet) in nine minutes, nine seconds, setting two new time to climb records. He also set a new world altitude record for turboprop aircraft in the Mohawk's weight class of 32,000 feet. The following month, COL Edward Nelson flew a Mohawk to a new turboprop speed record when he covered a 100 km closed course in twelve minutes, forty-eight seconds for an average speed of 292 mph.

Two early production Mohawks were also used for a number of special tests. In one such test, the two OV-1As deployed to Fort Greely, Alaska, during February of 1962 to conduct cold weather tests. During the Alaskan winter exercise, Operation GREAT BEAR, the aircraft performed well at temperatures down to minus 50° F and maintained a near perfect mission availability rate.

The second production OV-1A (29-2504) makes a low pass over a grass field during 1960. The box like pods on the wing roots are night photo flare dispensers which fired the flares up and away from the aircraft. (Grunman)

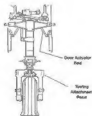


This OV-1A at Fort Ewell, Virginia during May of 1966 carries the subdued Flat Olive Brown color scheme introduced for Mohawks operating in Vietnam. The aircraft has been modified with two FM radio antenna masts mounted on the nose. (Author)

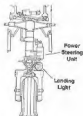
### Nose Whawl



YOA-1AF



OV-1A



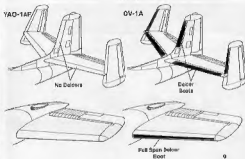


An OV-1A takes off from a grass strip during demonstrations of the Mohawk's Short Take Off and Landing (STOL) capabilities. The aircraft is in the early Gloss Olive Green scheme with high visibility markings used prior to its Vietnam war. The 150 gallon drop tanks are in Gloss White. (Grassman)

This OV-1A Mohawk on the ramp at Fort Belvoir, Virginia reveals the black delfer boots on the wing leading edge, vertical fin leading edges, and horizontal stabilizer leading edges. [Author]



## Delfers





# JOV-1A

The need to mark targets with smoke rockets and suppress enemy ground fire led the Army to experiment with arming the Mohawk. The original YAO-1AF had the hard points built into the wing to handle up to six underwing pylons, although early OV-1As rarely carried more than two. Normally, these pylons were used for carrying 150 gallon underwing tanks. When the Army decided that the OV-1A should be made capable of carrying armament, a total of fifty-four aircraft were returned to Cressman for installation of the full complement of six underwing pylons. These pylons were capable of carrying bombs, 50-caliber machine gun pods, or 2.75 inch rocket pods. These Mohawks had the cockpit modified with a Mark 20 gunsight being installed for use by the pilot. The Mohawks that had the pylons and Mk 20 gunsight installed were redesignated JOV-1As.

The Army stated that the sole purpose for arming the Mohawk was for fire suppression over the target area and for target marking with smoke rockets. Officially, the weapons were not intended for offensive operations but rather to allow the Mohawk to get into and remain over the target area — often at altitudes below 300 feet. It was felt that the gun pods would allow the Mohawk pilot to suppress enemy defenses long enough to get the pictures necessary to identify the target. In reality, Army field commanders liked the idea of having an aircraft capable of supplying their own tactical air support. This was further reinforced by the Mohawks fast reaction time to calls for air support. Mohawks, being based at forward bases, could be over the target area much faster than other air support aircraft that were confined to large bases further back from the battle.

Six JOV-1A Mohawks were assigned to the 23rd Special Warfare Aviation Detachment for operational testing in Vietnam. The JOV-1A was found to be a very stable and accurate weapons platform. Normal mission loads consisted of a 50 caliber machine gun, and either seven shot or nineteen shot 2.75 inch rocket pods, although the JOV-1A could carry a variety of other ordnance including 500 pound bombs, Mk 24 flares, and five inch Zuni rockets. After this period of operational testing, the Air Force demanded that the aircraft be withdrawn from combat.

This JOV-1A Mohawk demonstrates its load carrying capability by taking off with a load of four World War II vintage 560 pound bombs on the wing pylons. (Continued)



A rocket armed Mohawk of the 13th SFG A/C ready for pre-flight on the gleased steel ramp at Phu Bai, Vietnam during 1970. On one occasion, a rocket armed OV-1 is reported to have shot down a North Vietnamese MiG-17 fighter. (Scott Rubke)

The JOV-1A had created a storm of controversy in the Pentagon, where the Air Force remained steadfastly opposed to armed fixed wing aircraft being assigned to the Army. As a result of this Air Force opposition, an agreement was finally reached where the Army would cease operations with armed fixed wing aircraft and leave the close air support mission to the Air Force. The JOV-1A Mohawks were once again redesignated as OV-1As and, while officially they were no longer used for close air support, they retained their pylon and weapons capability. Many of the redesignated aircraft were passed to other Army aviation units in Vietnam and continued to serve its country when, on more than one occasion, they continued to carry armament — for self defense.

This JOV-1A makes a practice firing run with 2.75 inch rockets over an army gunnery range. The Mohawk was cleared to carry the Aero Products XM 157 seven shot 2.75 inch rocket pod and other ordnance. (Continued)





This JOV-1A Mohawk is configured for night armed reconnaissance with an SUU-12 .50 caliber machine gun pod on the center pylon and multiple rocket pods, each armed with nine Mk 84 Hares, on the inboard and outboard pylons. (Army Aviation Museum)

### Wing Pylons

OY-1A



JOV-1A



Mohawks in Vietnam were usually armed with seven-shot XM-157 rocket pods and nineteen-shot XM-159 rocket pods, both of which carried 2.75 inch rockets. The underwing weapons pylons on the Mohawk were a carry-over from the original Navajo specification which had called for a close-air support capability. (Army Aviation Museum)

This JOV-1A Mohawk over the South China Sea is armed with four XM-157 rocket pods each containing seven 2.75 inch rockets. The Mohawk also carries two 100 gallon drop tanks and wing root pylon flare dispensers. (Grueman)





## Specifications

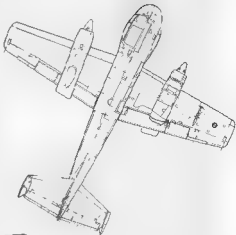
### OV-1A/JOV-1A Mohawk

**Wingspan** 43 feet  
**Length** 41 feet 11 inches  
**Height** 2 feet 0 inches  
**Empty Weight** 11,000 pounds  
**Maximum Weight** 15,000 pounds  
**Powerplant** Two 800 shp Lycoming T-55-T1 turbo-prop engines

**Armament** Six underwing pylons capable of carrying gun armor armor pods (JOV-1A)

#### Performance

**Maximum Speed** 287 mph  
**Service ceiling** 28,000 feet  
**Range** 840 miles  
**Crew** Two







The first production OV-1B (59-2422) on a test flight from the Grumman test facility displays its fuselage-mounted speedbrakes. These speedbrakes were later deleted as a weight saving measure on late production OV-1Bs. (Grumman)

The first production OV-1A (59-2500) and the first production OV-1B (59-2422) in formation over Long Island, New York during 1960. The OV-1B carried an eight-foot SLAR antenna pod attached to the third wing forewing pylon. (Grumman)



This Mohawk (59-2521) was the first OV-1B to roll off the production line. The OV-1B Mohawk had no provisions for dual flight controls or weapons armament, carrying only 160 gallon drop tanks on the underwing pylons. The SLAR (side looking airborne radar) unit carried on the OV-1B was the Motorola MR-3A/S-94. (Grumman)

### SLAR Installation

OV-1A



OV-1B



SLAR Pod Mount

14 Foot Fiberglass  
SLAR Pod

Carrying  
Brackets



The formation of three OV-10s and one OV-1C Mohawks on a training mission is unusual because most Mohawk missions, both training and operational, were conducted either singly or in pairs. (Grumman)

The West German Army Aviation tested five OV-10s that the French had flown during 1963. Both aircraft carried German markings and the side code GW - 2 in black. The aircraft flew 355 demonstration flight hours with both German and American pilots, however, for political reasons, the Mohawk failed to win a contract. (Grumman)



The French Air Force tested three OV-10s during 1962; however, the French decided not to purchase the Mohawk. While undergoing its evaluation in France, both aircraft carried French roundels and the side registrations ABW and ABV in white. (Grumman)

This OV-10 (52-5903) carries Vietnamese Army markings consisting of overall Flat Olive Brown with reduced Flat Black markings. Mohawks in Vietnam did not carry the normal U.S. star and bar insignia. (Grumman)





Maintenance personnel of the Aerial Surveillance and Target Acquisition (ASTA) platoon of the 1st Cavalry Division at An Khe, Vietnam prepare an OV-10 for another mission during 1967. The North Vietnamese removed large cowling panels which allowed the enemy access to the engines. (U.S. Army)

Sped 12: an OV-10 (64-4257) of the 131st SAC, takes off past a C-130 and a line of HH-43 Jolly Green Giant rescue helicopters for another mission from Da Nang, Vietnam during late 1968. One of the missions of the 131st was to maintain surveillance over the DMZ between North and South Vietnam. (Tom Henson via Wayne Wurts)



Agoodman views directs this OV-10B to the 131st SAC out of its parking spot on the combat flight lot, Vietnam during 1970. OV-10Bs in Vietnam normally flew with 150 gallon drop tanks to increase their endurance. Most OV-10B missions flown by the 131st SAC were over the DMZ, or over Laos and Cambodia. (Scott Walker)

## Wing Development

OV-1A  
(42 Foot  
Wing Span)



OV-1B  
(67 Foot 10.5 inch  
Wing Span)



Outer Wing Extended 2.91 Feet



As OV-10 is directed out from its parking spot on the pierced steelplank ramp of Landing Zone English on 28 February 1964, both side canopy windows are open to combat the heat buildup in the cockpit, under the tropical Vietnamese sun. (U.S.Army)

LOGAN carried its name on the nose in yellow along with a white pair of dice showing all twelve 5s for its call sign Speed 11. The Flat "Nine Dink" paint used on the Mohawks in Vietnam always looked rough due primarily to the tropical climate. (Tim Huxson via Wayne Muzia)

LOGAN, an OV-10B (59-2632) of the 131st Surveillance Airplane Company (SAC) on the ramp at Da Nang, Vietnam (during late 1966 or early 1967) had the radio-call sign Speed 11. The Mohawk derived its name on the nose in front of the cockpit, along with a white pair of dice. (Tim Huxson via Wayne Muzia)





## OV-1C

[illegible]

As a result, the authors have been able to identify a number of factors that are likely to be important in the development of the disease. These factors include:

1. The first step in the process of the investigation is to identify the problem. This is done by the investigator, who is usually a member of the research team. The investigator will then conduct a literature review to determine what has been done in the past. This will help to identify the gaps in the knowledge and to determine the scope of the investigation.

These results suggest that the use of the model to be developed for the evaluation of the Mediterranean diet is possible. Furthermore, the model can be used to estimate the effect of the diet on the risk of developing the disease. The model can be used to estimate the effect of the diet on the risk of developing the disease. The model can be used to estimate the effect of the diet on the risk of developing the disease.

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### Nose Development

## CV-1B/CV-1C (Early)



NA-80 Panoramic Camera

During 1968 a number of specially modified OV-10s were deployed to Vietnam under the code name *Sevensome Seven* (C-7 more). These were usually the TH-1A variants for pass as Phu Bai, Vietnam until 1972 and reportedly were equipped with a main cabin door and various packages although the aircraft were externally identical to a standard OV-10. Their uses, functions and missions remain classified.

The RV-1 (later changed to RV-1B) was used for OV-10s but were also used for maintenance in the electronic, radio, and sensor role until the Quick Look payload system was installed on standard OV-10s. These aircraft could be improved and updated to carry a variety of sensors ALQ-119 ECM pods and other electronic warfare and electronic support systems.

During 1968 production of the Mohawk was halted until the Army and Air Force could reach an agreement on which services would operate the Mohawks and other Army fixed-wing assets. Initially, the agreement was reached, the Air Force took on a greater role in the Army assets. The Army gave up the OV-10s but has tried to do Air Force support. It was agreed the Air Force would take on a tactical air support role. After this agreement was reached production orders for additional Mohawks were placed. Grumman used this time to move the Mohawk production line from Bethpage to a new facility at Stuart, Florida where Mohawk production resumed during 1967 and continued until both the L-1 and L-15 powered OV-10s were built a total of 1,711 aircraft being delivered during 1969.



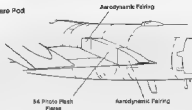
The photo flash dispenser mounted on the wing root was bolted in place and was easily removed. Despite its bulky appearance the dispenser had a negligible effect on the Mohawk's performance. (Author)

## Illumination Equipment

Spad 23, an OV-10 of the 13th SFG was in its element at Phu Bai, Vietnam during 1970. When on the ground, the propellers were feathered and the side windows were normally left open to offset the heat in the cockpit generated by the canopy. (Scott Rubick)



### Photo Flash Pod



### LS-56 Strobe Pod





(Above) This OV-1C (51-2586), at Fort Eustis, Virginia during March of 1966 carries photo flare dispensers on the wing trailing edge next to the fuselage. The dispenser can be carried singly or in pairs with each flare dispenser carrying fifty-four photo-flash flares. (Author)



This OV-1C (60-3748) was the fourth OV-1C off the production line. It features the short wing and fuselage mounted speed brakes of the OV-1A. Later OV-1C production changed over to the long wing and no speed brake of the OV-1B. (Hugh R. Miller)

(Below) This OV-1C (51-2714) was tested with a ski landing gear at Bemidji, Minnesota during February of 1965. When the ski were fitted, the nose wheel doors were removed with the nose wheel well being covered by the ski itself. The white stripes on the fuselage were photographic registration markings. (Greenman)





This OV-10 (81-2556) was used as a test aircraft at Fort Rucker, Virginia during 1986 and carried the early Goose Olive Drab scheme and tail markings. (Author)



This overall Flat Olive Drab OV-10 (58-15952) of the Georgia National Guard is an early production aircraft fitted with the fuselage mounted air brakes. The National Guard insignia is carried on the rudder. (Douglas Siewak)

(Below) This OV-10 (64-94262), although in Army markings, was assigned to the Navy Test Pilot School at Patuxent River, Maryland and carried the school insignia on the wing tank. This same aircraft later served with the Environmental Protection Agency. (Jerry Goss)





The flat glass panels on the nose of the OV-10 are the camera windows for the KA-50C panoramic camera. The long extension under the glass panels is for the AN-APN-65 wide area receiver, while the two round sensors on each side of the nose are antennas for the AN/APN-25 Radar Homing and Warning (RHW) receiver. (Dick David via Cobra Company)



This OV-10 (97-18098) of the 73rd Combat Intelligence Company (CIC) during 1999 is carrying a pair of the newly used 300 gallon ferry drop tanks in place of the 150 gallon drop tanks normally carried on the Mustang. (Grynniss)

## Fuselage Development

OV-1C



OV-1D





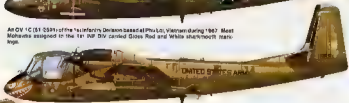
This VAO-1AF (57-8463) service test aircraft started the flight test scheme of overall Gloss White with Red trim, Black lettering and U.S. Navy propeller markings stripes during 1958 and early 1960.



This OV-1A (59-9517) of the 33rd Special Warfare Aviation Detachment was one of six deployed to Vietnam during 1963 for operational testing.



An OV-1C (51-2591) of the 1st Infantry Division based at Phu Bai, Vietnam during 1967. Most Mohawks assigned to the 1st INF DIV carried Gloss Red and White sharkmouth markings.



An OV-1B (59-2976) of the 131st Surveillance Airplane Company based at Phu Bai, Vietnam during 1967.



An OV-1D (59-17021/42-498) of the 32nd Defense Force/Air Force during 1975. The 32nd AF operated two OV-1Ds until they were replaced by Grumman E-2C Hawkeyes.





This Glushko Navy Blue and Glushko White OV-1C (N8762/80-3756) of the U.S. Customs Service was used to track drug-running aircraft during 1970.



This overall Glushko White OV-1D (84-4043) served with the U.S. Environmental Protection Agency during 1984.



This OV-1B (90-5088) carried both U.S. Army markings and the badge of the U.S. Navy's Test Pilot School on the fin. The aircraft was operated by the NTPS at NAS Patuxent River, Maryland during 1985.



This OV-1B (N171) was flown by the U.S. Department of the Interior, Geological Survey during 1971 to survey earthquake fault lines.

An OV-1D (84-14263) of a U.S. Army military intelligence unit in Germany during 1986. The overall Flat Light Grey paint is designed to reduce the aircraft's signature.





The current camouflage for the OV-10 consists of a low visibility overall Aircraft Gray which is intended to both reduce the aircraft's visibility and lower its infrared signature. All markings on the aircraft are in Flat Black. (Grimman)

### Rear Fuselage Development

OV-1C

No Speed Brake



OV-1D

FM Antenna

Speed Brake

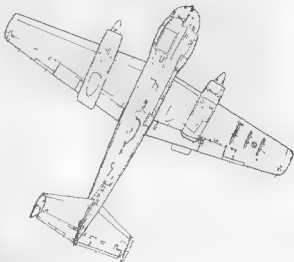
FM Homing Antenna



This OV-1D (58-18938) of the 73rd Combat Intelligence Company operates in Europe, maintaining surveillance of Communist activities in the Eastern Bloc countries. The 73rd CIB has operated the Mohawk longer than any other unit in the Army, receiving their first aircraft during 1965. The 73rd has down Mohawks in the United States, Vietnam, Germany, and other locations. (Grimman)







## Specifications

### OV-1D/RV-1D Mohawk

Wingspan	44 feet
Length	44 feet 1 inches (with SLAR)
Height	13 feet 8 inches
Empty Weight	1,357 pounds
Maximum Weight	14,100 pounds
Powerplant	Two 80 shp Lycoming T-53-701 turboprop engines

Armament	None
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#### Performance

Maximum Speed	905 mph (289 mph with SLAR)
Service ceiling	25,000 feet
Range	1,311 miles
Crew	Two





[Above] The large blade antenna just behind the cockpit of this CV-10 of the 73rd CIC is for the JHP-916 system. The small sat antenna on the fuselage spine is an Automatic Direction Finder loop antenna. These are just part of the extensive onboard communications equipment fitted to the CV-10. (Gruhn/ruen)



[Above] The Israel Self Defense Force/Air Force (IDF/AF) operated two CV-10 Mohawks between 1974 and 1976. While the IDF/AF service the Mohawks carried both military insignia and civilian registrations. The mission of these Israeli Mohawks remains classified. (E. Manquise)

[Below] This CV-10 carried the civil registration G-JRA (89-7001) during its service with the Israel Defense Force-Air Force. The IDF/AF replaced the Mohawks with German B5C Hawkeyes shortly during 1976, returning the Mohawks to the US. (IDF)







[Above] This RV-10 (S/N 89321) of the Army Flight Test Center was developmental test air craft used for the testing of the AIM-9C-147 infrared suppression system (Hot Brick) during 1977. The Hot Brick system required an extra air intake which is visible just above the engine. (GUMMAN)

[Below] This overall light grey RV-10 (S/N 14263) is carrying the Quik Lock II GCW sensor pod on the outboard starboard pylon. The Quik Lock II pod is hard mounted on a Grumman designed non-rotatable pylon. (GUMMAN)





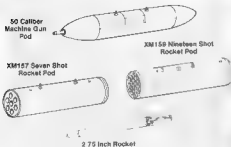






When armed with a pair of seven-shot and a pair of nineteen-shot rocket pods on the wing stations, a total of thirty-two 2.75 inch FFAR rockets could be carried by the Mohawk. This OV-1A Mohawk is assigned to the 73rd SAC based at Vung Tay, Vietnam during October of 1966. (Author)

### OV-1 Armament



The air-to-air battles were not always in favor of the Mohawk and at least one OV-1 was lost to a MiG during 1969. This Mohawk was the only Army fixed wing aircraft lost in Laos during the Vietnam conflict.

Most of the twenty-seven Mohawks lost during the Vietnam war were shot down by enemy ground fire except for one OV-1 that was destroyed on the ground during an enemy attack on its base during by 1968 and one other that was lost to a SA-2 missile surface-to-air missile SAMs while on a mission near the DMZ during 1966. A further thirty-six Mohawks were lost due to operational accidents. Several accidents in Vietnam suggested a problem with the ejection seats on the OV-1. At one point, the ejection seats could cause a problem for the pilot, in that when the observer's seat fired, the pilot would be slightly leaning the pilot seat out to the side at an angle that the problem was corrected. Ejection system procedures were modified to lessen the impact to the pilot.

There was doubt that the Mohawks' design was the agency's best. Vietnam F-4s had long been the Army's favorite in the field but an arm's length from the jet was a small aircraft that could provide them with such information in enemy air bases. Their requests for aerial surveillance in fighter attacks were usually treated through channels to the USAF, the empty process one had to navigate. Requests for the Mohawk's support. In time the request was changed to request for close support. In 1966, a request for support of the Mohawks in the fighter theater was the ground crew was often request Mohawk support because the air was under Army control it was quickly available could remain on station for a long time and it was accurate while delivering ordinance. The Mohawk's quick reaction time was perhaps its best asset while having the air support move quickly is far more important to the ground soldier than the type of aircraft providing that support.

A Mohawk of the 73rd SAC, armed with 50 caliber machine gun pods and 2.75 inch rocket pods, sets up on a runway made of sand filled 55 gallon fuel drums at Vung Tay, Vietnam during October of 1966. (Author)





[illegible][illegible]

An OV-10 of the 73rd SAG on a mission over Vietnam on 11 September 1967. The 73rd SAG was based at Vung Tau, Vietnam, a beautiful Rest & Recreation (R&R) center about thirty-five miles south east of Saigon on the South China Sea. (U.S. Army)

OV-1 could not maintain the SA-2, although one OV-1 was shot down by an SA-2 during 1960. By 1968 passive warning ECM equipment was installed to help OV-1s speed up along the  $\omega$ -Mn, giving them a much earlier warning of a radar lock-on and possible loss.

Working a gig as an Army oven-bell bellhop in a hunter-kills top job, the Milwaukee man provided me and my agents to locate various campaigns and other targets for the CIA's Air Force team were also given to their agents at the same time. Regarding CIA's policy of U.S. soldiers and officers flew around with their "backpacks" and "bags" in the neighborhood of the CIA, it means when they're high in the air, particularly when they're carrying a large amount of equipment and a lot of weapons. Milwaukee's reputation as a high-society party in the city was also a factor in the CIA's interest in his subject who, as a soldier in the CIA, the Viet Cong called him "the man" Milwaukee's "Whispering Death" because the quiet voice of his subject was given to him or to the CIA of the CIA's interest in him. It was just one.

Army combat commanders like M. Jank and the others made good operational readiness use of any Army aircraft they saw. At times, the Mi-6s were able to return a small anti-air attack with a high degree of effectiveness both in air and on the ground, the maintenance personnel who maintained the





An OV-10C (61-5715) of the 531st Surveillance Airplane Company, radio call sign Speed 23, carried the name *We're Dreamin' Back* on the nose under the cockpit. The aircraft was based at Phu Bai, Vietnam during late 1968 or early 1969. (Tom Hawson via Wayne Matus)

An OV-10C (61-5691) of the 1st Infantry Division parked in its revetment at Phu Loi, Vietnam during 1967. Most of the Mohawks assigned to the Big Red One were painted with Red and White shark-mouth markings and carried the Division crest on the center fin. (Grimmer)



Speed 12 of the 31st SAC, shown the radio at Da Nang, Vietnam during late 1968 or early 1969 with an O- Bird Dog. The 12 carried on the center of the Black anti-plane panel was its Yellow. (Tom Hawson via Wayne Matus)





An QV-1A Ereson a target with 2 F3-inch FFAR rockets. The Mohawk is armed with an RAA-2 CSU-12 50 caliber machine gun pod on the starboard outer wing pylon, a nineteen-shot 300-55 2.75 inch rocket pod on the starboard inner pylon, a seven shot rocket pod on the port outer pylon, and a four shot Aero Products CJU-10A 2.75 inch rocket pod on the port inner pylon. (Grumman)

These armed QV-1As of the 131st Aviation Company (formerly the 131st SAC) on the parked steep park ramp at Phu Bai, Vietnam during 1971 have all their access panels open for pre-flight inspections. Obviously the use of weapons on Mohawks was ended during 1968. (Scott Ruzick)



The QV-1A of the 1st Infantry Division at Ton Son Nhut, Vietnam in December of 1966 carries a Red and White sharkmouth marking on the nose. The propellers are feathered to prevent them from windmilling while the aircraft is parked. (Junko)





A crew member cleans the windscreen of an OV-10A that has been retrofitted with a nose cannon and ILS antenna. The small Red Cross painted on its nose wheel door indicates that this OV-10 has taken hits from enemy ground fire. (Scott Rubels)



An armed OV-10A of the 3rd SFG, Night Hawks, on patrol over the Vietnamese country side. The white bar down the fuselage spine was a recognition marking to make spotting the Mohawk easier for higher flying fighter aircraft. (Scott Rubels)

Three OV-10s were used by the 101st SFG for SAR missions into Cambodia, Laos, and North Vietnam. The protective coverings for the Mustangs were made of wood filled with sand. These proved to be impractical and were later replaced with metal and concrete coverings. (Scott Rubels)





This OV-10 of the 3rd SFG (A) works in its environment for a long mission with the canopy open and propellers feathered. The Hawk insignia on the tail was in Black, with Whitebeak and Yellow talons. The number beneath the Hawk read 21 AW Co with NIGHT on the left side and HAWK on the right side. (Scott Rubke)

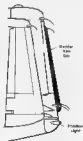
An OV-10 of the 10th Special Aviation Company on patrol over Vietnam during 1971/72. The forward portion of the engine cowling was painted flat black to serve as an anti-glare panel for both the pilot and observer. (Scott Rubke)

During one period at Phu Bai the company tow tractor was broken and the Stebawks were towed into their movements and had to use reverse pitch on their propellers to back out. The small blower alongside the tail position light is the tail antenna for the Radar Warning and Warning (RHW) system fitted to OV-10s for protection against SA-2 missiles. (Scott Rubke)

## RHW Antenna

OV-10 Early

OV-10 Late





This OV-10 formerly belonged to the 22nd SAC before being assigned to the 3rd at Phu Bai and still carries its former unit marking on the tail. The vertical bars were Red, White, and Blue, while its tail number 4 was in Yellow. (Scott Rutka)

This armed OV-10 Mohawk carries four 300-167 seven-shot rocket pods and a CTU-17A air dropped resupply container painted with a Red and White sharkmouth marking. (Bob Cheloweth via Cobra Company)



The Foodrunner cartoon character carved on the side of this Mohawk of the 101st SAC graphically sums up the way most soldiers left about being in Vietnam during 1971. (Scott Rutka)

# Non-military Mohawk Operations

Agencies to make use of the Mohawk is a variety of special non-military operations. The aircraft is used in a variety of roles, including surveillance, reconnaissance, and intelligence gathering. The aircraft is also used in a variety of other roles, including training and support.

## Army Assistance to Federal/State Agencies

The Army has been providing assistance to federal and state agencies in a variety of ways. This assistance includes providing training, equipment, and personnel. The Army has also been providing support in a variety of other ways, including intelligence gathering and surveillance.

The presence of an aircraft in a series of missions. Mohawks of the 641st Military Intelligence Battalion have been used in a variety of ways, including surveillance, reconnaissance, and intelligence gathering. The aircraft has also been used in a variety of other ways, including training and support.

A few Mohawks have flown missions for various state agencies to monitor and track the activities of various groups. The aircraft has also been used in a variety of other ways, including training and support.

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## Mohawks in Other Government Agencies

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For the code was too revealing of the OV-10 mission, was replaced by the OV-10. The aircraft was then flown without identification markings. Later, during 1973, the aircraft were flown without identification markings. The aircraft was then flown without identification markings.

Customs took delivery of the modified aircraft during mid-1971. The aircraft was then flown without identification markings. The aircraft was then flown without identification markings.

thought given to getting Customs Mohawks. However, U.S. law, as well as the aircraft's design, made it difficult to keep pace with the majority of aircraft used in the drug trade. The aircraft was then flown without identification markings.

used over by a variety of a reconfiguring. Customized E-2 aircraft were used over by a variety of a reconfiguring. Customized E-2 aircraft were used over by a variety of a reconfiguring. Customized E-2 aircraft were used over by a variety of a reconfiguring.

an OV-10 with a modified SLAR. Operating under the control of the U.S. Navy, the aircraft was used in a variety of ways, including surveillance, reconnaissance, and intelligence gathering. The aircraft was then flown without identification markings.

ap. 20-10 of the 641st Military Intelligence Battalion, Joseph Howard Stead is credited with the aircraft. The aircraft was then flown without identification markings.

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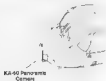


Customs OV-1C

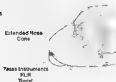
This Oregon National Guard Mohawk was originally an OV-1C which was rebuilt to OV-10B standards. National Guard Mohawks are often called upon to provide various services to State agencies such as forest surveys using CDRI film to detect plant diseases. (Author)

The U.S. Customs Service operated a total of four Mohawks, using them operationally from 1971 until 1988. They were all delivered from the Army in the standard U.S. Army Red and White training color scheme before being repainted in Customs colors and markings. (Verdon Breen)

OV-1C



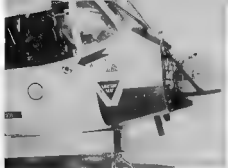
Customs  
OV-1C







The FLIR turret installed on Customs Service Mohawks is made by Texas Instruments and has proven to be very effective in tracking low flying aircraft. The FLIR installation is similar to the installation used on the Navy's Grumman A-66 Intruder attack aircraft. (Vernon Green)



The Forward looking infrared sensor turret as installed on a Mohawk which is destined for the U.S. Customs Service. After the FLIR was in place an modified nose cone was added which extended the nose of the Mohawk slightly. (Vernon Green)

This OV-1 of the U.S. Customs Service is painted in Gloss Navy Blue and White. The white pod under the nose is a forward looking infrared (FLIR) sensor turret used to track low flying aircraft. (Vernon Green)



During 1974, the USC-5 OV-10 was used in surveying the route of the Alaskan oil pipeline and later this year it helped locate pack ice in the Beaufort Sea off the North coast of Alaska. In the frozen Arctic, the use of an ejection seat to abandon a crippled aircraft would mean a 100% certain death due to exposure. As a result the OV-10B was equipped with special underwing pods loaded with emergency flotation gear that would allow the survey crew to ditch the aircraft and have a much better chance at survival. Originally the USC-5 OV-10B retained its U.S. Army Olive Drab paint scheme and Army serial number. Later it was repainted in a Red and White color scheme with a civil N number registration. Its crew only three man's. SC5 pods were a couple of gray lined drums which started with the green color, turned black flying forward, graduated, and went on to become highly proficient survey pilots.

The U.S. Customs Service used the Mohawk to track suspected drug smuggler aircraft in day, night, or bad weather. The Customs Service operated the Mohawk for some fifteen years before finally replacing them during 1988 with Grumman E-2C Hawkeyes. (Heron Shunt)

The Environmental Protection Agency (EPA) used an OV-10 to monitor atomic power plants during the early 1970's. The specially equipped Mohawk could detect a 1/4 degree change in air temperature, which could possibly signify the presence of a radiation leak. Initially it, like the USC-5 aircraft, retained its Army paint scheme. Later it was repainted in an overall White scheme with EPA insignia. The aircraft was later returned to U.S. Army service.

H4 & Co., an engineering firm in Las Vegas, obtained a contract with the Atomic Energy Commission to monitor the underground atomic bomb tests in Nevada. For this contract they obtained a single OV-10 during 1975 and replaced it with about a year.

Additionally, there are at least three privately owned Mohawks, one of which was used in the filming of two western series, "Buck Thunder" and "Ace Wolf". Usually the Mohawk was cast in the role of a bad guy with underwing gun pods.





(Above) The U.S. Geological Survey Department operated this Cessna 441 during 1971 with the civil registration N171. The aircraft retained its original Red and White Army color scheme with the Geological Survey logo replacing the United States Army on the fuselage in Back. Author

(Below) The Cessna 441 (N171) was operated by the Environmental Protection Agency during the early 1970s to monitor water pollution and nuclear power plants. (Dave Menard)



# Future Mohawk Programs

At the beginning of the OV-1 program, the Army had planned that the Mohawk would have a twenty year service life. Now, some thirty years later, only a relatively few Mohawks have reached a total of 7000 flight hours, or half of the Mohawk's original design fatigue life. As a surveillance system, the equipment installed on the OV-1D has nearly twice the capabilities as those installed on the earlier OV-1As, OV-1Bs and OV-1Cs. Incidentally, most senior Army commanders feel that the Mohawk's real potential still lies ahead.

To the Army's battlefield commanders, the fact that the majority of the OV-1 fleet is far from the end of their useful service lives is welcome news. Currently there is no finalizing replacement aircraft under consideration or design and Army officials indicate that it will be close to the year 2000 before work on a replacement for the Mohawk will be started.

With this in mind the Army continues to plan progressive updates and improvements for their fleet of OV-1D/RV-1Ds that will keep the aircraft in front line service well into the next century. New avionics systems and surveillance equipment planned for installation on the OV-1D Mohawk will be lighter and new data-link communications equipment will be faster. Most OV-1Ds now carry the ADR-6 radiation monitoring/radiation system in the rear fuselage. This system allows the crew a constant mapping of ground radiation levels along the aircraft's flight path. Using such information the ground commander could plan his movements around areas of high radiation in the event of a tactical nuclear exchange. The ADR-6 also provides the crew with an audible warning should radiation levels reach the danger point for the aircraft and crew. New ECM equipment, such as the AN/ALQ-147 IR jammer and APR-25/26 RHAW suite carried on all OV-1Ds and RV-1Ds, will enhance the Mohawks ability to survive on the modern battlefield. These improvements will enable commanders to continue to base their battlefield decisions on accurate and timely information provided by this unique asset.

Presently, the Mohawk is no longer permitted to carry weapons, however, it does carry some of the most sophisticated electronic and imaging systems ever to go into a tactical combat aircraft. The OV-1 continues to soldier on after a career of over thirty years because it continues to deliver what it was designed to do. The airframe has been found to be extremely adaptable allowing the Mohawk to be successfully adapted to carry rapidly changing surveillance technology. Today the Mohawk is the Army's only fluid-wing combat aircraft.

The OV-1 is one of the safest aircraft currently in the military inventory. It has all weather capability, ample emergency and bail-out systems, and, if all else fails, ejection seats. Grumman continues to work on future upgrades to the OV-1D Mohawk. Recently there have been reports that the Army is considering another rebuild program of older OV-1 airframes under the designation OV-1E. No details of this program have been released at this time. However, it is believed that these aircraft will be outfitted with updated engines, solid state electronics, and state-of-the-art ELINT/SEGINT equipment for use in the NATO area of operations.

Grumman has also proposed for block improvements, Service Life Extension Programs (SLEP) and other programs for the existing fleet of OV-1Ds. Total production of the Mohawk was 390 aircraft; of those, approximately 225 are still in active service. Current Army Military Intelligence battalions consist of a company of ten to twelve OV-1Ds augmented by a second company equipped with six RV-1Ds and six RU-21/RUC-2 aircraft. There are currently six active and reserve/National Guard battalions, plus various support and training companies. There are two battalions based in Europe and



This RV-1D (84-14243) was converted from an OV-1B to RV-1D standards. By conducting Service Life Extension and other rebuild programs, the Army will ensure that the Mohawk's equipment and sensors will keep the aircraft current despite rapidly changing technology and operational requirements. (Doug Bowles)

one in Korea, while the US based units often deploy to hot spots closer to home. Mohawks have been used in Central American monitoring activity in Honduras, El Salvador, and other countries.

Most of earlier OV-1As are available for future rebuild programs, being held in storage at Davis-Monthan Air Force Base near Tucson, Arizona. These aircraft are available should the Army decide to go ahead with the OV-1E rebuild program. As one Army commander put it: "The best replacement for the Mohawk would be another Mohawk."

This RV-1D Mohawk (84-14244) of the 2nd Military Intelligence Battalion has its equipment stored at an overseas maintenance. The 2nd MIB is stationed at Stuttgart, West Germany as part of the 5th AFD D Detachment. (Staff)



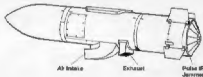


This OV-10 was the first new production aircraft off the Grumman production line and with service life extension programs and other improvements it will probably remain in service for years to come. Mohawks are expected to remain in service with both the regular Army and National Guard well into the late 1990s. (Wayne Muttz)

This OV-10 (66-18954) of the 641st Military Intelligence Battalion carries a small cartoon character on the nose just in front of the black ejection seat triangle. The wheel wells and landing gear door interiors are painted Gloss White. (Douglas Stowick)

# AN/ALG-147 (V) 1 IR Counter Measures Pod

OV-10/RV-10





A number of early OV-10 Broncos, such as these OV-10As, are in storage at Davis-Monthan Air Force Base and are available for future rebuild programs. These aircraft have an opening sealed with a plastic coating to protect them from dust and weather. (Tom Garcia via Wayne Muttaz)

This OV-10 parked on the ramp at El Paso, Texas on 28 February 1955, is assigned to the 534th Military Intelligence Battalion. The propellers are feathered, a standard practice for Mohawks when parked, to prevent them from windmilling. (LT M.J. Kuslube)



This National Guard OV-10 (87-18327) is now at the Greenville facility at Stuart, Florida for modernization and upgrading. The two teardrop shaped fairings on the lower forward fuselage are the attachment points for the BLAR pod. (Author)

This OV-10 (84-14338) on the ramp at Wiesbaden, West Germany on 1 August 1984, was destroyed in a crash a short time later. The ELINT pod on the wing is oval Past Black. (P. Zastrow)



An aerial Fiat Olive Brown OV-1B (14-14579) of the 73rd Surveillance Airplane Company flies a search mission over the Mekong Delta. The 73rd SAC was based at Vung Tau, Vietnam during 1967.



An aerial Fiat Light Gray OV-1D (59-18938) of the 73rd Combat Intelligence Company (A) of the 2nd Military Intelligence Battalion, based at Bamberg, West Germany during 1968.

